REMARKS

Claims 1-33 are pending in the present patent application. Claims 1, 2, 4-12, 14-16, 23-26 and 33 were rejected. Claims 3, 13, 17-22 and 27-32 are objected to. This application continues to include claims 1-33. Reconsideration of the rejection of claims 1, 2, 4-12, 14-16, 23-26 and 33 is respectfully requested in view of the remarks that follow below.

Applicants thank the Examiner for the indication of allowable subject matter with respect to claims 3, 13, 17-22 and 27-32, and that claims 3, 13, 17-22 and 27-32 would be allowable if rewritten in independent form. Applicants, however, believe that the associated base and intervening claims are allowable in their present form, and, as such, do not believe that such amendments to claims 3, 13, 17-22 and 27-32 will be necessary.

In the Office Action Summary, box 10 regarding the drawings as filed is checked, but the explanation box is not checked. Clarification is respectfully requested.

Claims 1, 5-6, 10-11, 15-16, 25-26 and 33 were rejected under 35 U.S.C. 102(b) as being anticipated by Arquilevich, et al. (U.S. Patent No. 6,137,592).

Arquilevich, et al. is directed to correcting for errors relating to a relationship between the print media and the printhead. Two types of errors are addressed: line-feed errors and swath height errors. Arquilevich, et al. defines a swath height error as follows: "Swath height error is a variation between the outer distance (in the direction of media travel) among nozzles in a nozzle array of the printhead and the outer distance among dots printed by such nozzles. Fig. 6 shows an array 96 of nozzles 97 on a printhead 98 of a[n] inkjet pen print source 38. Also shown is an array 100 of dots 102 resulting from ejection of ink from such nozzles 97 onto a media sheet 44. The distance 11 corresponds to the linear span of the nozzles 97 in the direction of motion of the media sheet 44 along the

media path during printing. The distance 12 corresponds to the linear span of the resulting dots 102 in the same direction of motion. The difference between l2 and l1 is the swath height error." (Arquilevich, et al., column 9, lines 20-32; emphasis added). As further disclosed, "Such error occurs, for example, when the media sheet 44 is not parallel to the printhead 98 (i.e., the distance from a first nozzle to the media is different than from another nozzle to the media). As for the linefeed adjustment correction, a test plot 80 having multiple areas 82-90 is printed as shown in FIG. 5. Each area has the same test pattern (e.g., gray scale image or another pattern), but is printed at a different swath height adjustment factor. Again the best adjustment is perceived by the viewer as the test pattern area of the areas 82-90 with least or no banding. Per the illustrated test plot 80, the area 86 demonstrates the swath height error adjustment parameter value which results in the best print quality. The swath height error adjustment parameter is set to the value corresponding to the selected area of the test plot 80." (Arquilevich, et al., column 9, lines 32-46). Thus, the Arquilevich, et al. approach is an in-printer approach with respect to a particular printhead installed in the printer, and the user selects the desired correction based on the test pattern generated.

Applicants' claim 1 recites, in part, "establishing a nominal printhead swath height to be associated with printheads of a particular type". In contrast to Arquilevich, et al., as disclosed for example in Applicants' specification at page 12, lines 21-24, each printhead of a particular type, such as a color printhead (see also, page 14, lines 13-18), will have a predefined nominal printhead nozzle spacing (NPSH) corresponding to an ideal nozzle pitch (INP), and wherein a nominal printhead swath height is defined by the equation: NPSH = INP X (N), wherein N represents the number of nozzles in the columnar array. Thus, the nominal printhead swath height used in the present invention is the ideal printhead swath height for an

ideal printhead of a particular printhead type, and not the actual printhead swath height as determined by the actual distance between the upper and lower nozzles of the printhead under test, as disclosed in Arquilevich, et al.

Claim 1 further recites, in part, "measuring a printhead swath height of said first printhead", "determining a difference between the measured printhead swath height of said first printhead and said nominal printhead swath height" and "generating a printhead swath height correction value based on said difference".

In contrast, Arquilevich, et al. discloses at column 9, lines 36-46 that, "a test plot 80 having multiple areas 82-90 is printed as shown in FIG. 5. Each area has the same test pattern (e.g., gray scale image or another pattern), but is printed at a different swath height adjustment factor. Again the best adjustment is perceived by the viewer as the test pattern area of the areas 82-90 with least or no banding." Thus, in Arquilevich, et al. the "swath height adjustment factor" is determined by printing a plurality of patterns and the user selecting the best pattern, whereas in the present invention a printed swath height is measured, a difference between the measured printhead swath height of the first printhead and the nominal printhead swath height is determined, and a printhead swath height correction value based on the difference is generated.

Applicants' claim 1 further recites, "storing said printhead swath height correction value in a printhead memory associated with said first printhead." Since the Arquilevich, et al. correction method has to do with an in-printer approach to correct within the particular printer in which the printhead is installed, there is no disclosure of storing the correction value in the printhead memory, nor is there any necessity to do so. Rather, Arquilevich, et al. only discloses a printer memory 36 (Arquilevich, et al. Fig. 1). In contrast to Arquilevich, et al., with this embodiment of the present invention the printhead

swath height correction value stored in printhead memory travels with the printhead, regardless of the printer in which the printhead is ultimately mounted.

Accordingly, for at least the reasons set forth above, Applicants believe claim 1 is in condition for allowance in its present form.

Claims 5, 6 and 10 depend from claim 1. Accordingly, claims 5, 6 and 10 are believed patentable in view of their dependence from an otherwise allowable base claim. In addition, claims 5, 6 and 10 are believed patentable in their own right.

For example, claim 5 recites, "The method of claim 1, wherein said nominal printhead swath height is defined by an ideal nozzle pitch multiplied by a number N of nozzles in a columnar array of said first printhead."

In rejecting claim 5, the Examiner relies on Arquilevich, et al., Fig. 6. However, Fig. 6 considers the actual linear span of the nozzles of the printhead under test, and not a nominal printhead swath height for printheads of a particular type. As set forth in Arquilevich, et al., column 9, lines 23-32, "Fig. 6 shows an array 96 of nozzles 97 on a printhead 98 of a[n] inkjet pen print source 38. Also shown is an array 100 of dots 102 resulting from ejection of ink from such nozzles 97 onto a media sheet 44. The distance 11 corresponds to the linear span of the nozzles 97 in the direction of motion of the media sheet 44 along the media path during printing. The distance 12 corresponds to the linear span of the resulting dots 102 in the same direction of motion. The difference between l2 and l1 is the swath height error." (Emphasis added).

As set forth above, Arquilevich, et al. uses the actual linear span of the nozzles of the printhead under test (distance l1). Accordingly, Arquilevich, et al. does not disclose, teach or suggest defining a nominal printhead swath height of printheads of a particular type by an ideal nozzle pitch multiplied by a number N of nozzles.

Accordingly, claim 5 is believed allowable in its own right.

Claim 10 recites, "The method of claim 1, further comprising the step of retrieving said printhead swath height correction value from said printhead memory and using said printhead swath height correction value to modify at least one of an image data format and a nominal media advance distance of an ink jet printer to establish a modified media advance distance."

Nowhere in Arquilevich, et al. is there any disclosure, teaching or suggestion of storing printhead swath height correction value in printhead memory, nor is there any disclosure, teaching or suggestion of retrieving the printhead swath height correction value from printhead memory. Rather, the memory 36 of Arquilevich, et al. shown in Fig. 1 is memory of printer 14. As stated in Arquilevich, et al. at column 6, lines 10-17, "To account for differences in roller diameter from printer to printer a linefeed error adjustment parameter is defined for the specific printer. Such parameter is derived from a calibration process. Given the specific tolerances for the rollers 46 of a printer model, it is expected that the linefeed error adjustment will be within a known range of values. Values within such known range are stored in memory 36 of the printer 14." (Emphasis added).

Thus, with this embodiment of the present invention the printhead swath height correction value stored in printhead memory travels with the printhead, regardless of the printer in which the printhead is ultimately mounted, and is retrieved from the printhead memory by the printer in which the printhead is installed, whereas in Arquilevich, et al. if the swath height error adjustment parameter is retrieved, it is retrieved from printer memory 14, and the swath height error adjustment parameter cannot travel with the printhead if the printhead is removed from printer 14.

Accordingly, claim 10 is believed allowable in its own right.

Independent claim 11 is believed allowable for substantially the same reasons set forth above with respect to claim 1.

Claims 15, 16 and 25 depend from claim 11. Accordingly, claims 15, 16 and 25 are believed patentable in view of their dependence from an otherwise allowable base claim. In addition, claims 15, 16 and 25 are believed patentable in their own right.

For example, claim 15 is believed patentable in its own right for substantially the same reasons set forth above with respect to claim 5.

Independent claim 26 recites, in part, "a controller communicatively coupled to said printhead and communicatively coupled to said feed roller unit, said controller executing process steps to retrieve said printhead swath height correction value from said printhead memory, said controller using said printhead swath height correction value to modify said nominal media advance distance to establish a modified media advance distance for use with said feed roller unit when printing with said printhead."

Nowhere in Arquilevich, et al. is there any disclosure, teaching or suggestion of storing printhead swath height correction value in printhead memory, nor is there any disclosure, teaching or suggestion of retrieving the printhead swath height correction value from printhead memory. Rather, the memory 36 of Arquilevich, et al. shown in Fig. 1 is memory of printer 14. As stated in Arquilevich, et al. at column 6, lines 10-17, "To account for differences in roller diameter from printer to printer a linefeed error adjustment parameter is defined for the specific printer. Such parameter is derived from a calibration process. Given the specific tolerances for the rollers 46 of a printer model, it is expected that the linefeed error adjustment will be within a known range of values. Values within such known range are stored in memory 36 of the printer 14." (Emphasis added).

Thus, with this embodiment of the present invention the printhead swath height correction value stored in printhead memory travels with the printhead, regardless of the printer in which the printhead is ultimately mounted, and is retrieved from the printhead memory, whereas in Arquilevich, et al. if the swath height error adjustment parameter is retrieved, it is retrieved from printer memory 14, and the swath height error adjustment parameter cannot travel with the printhead if the printhead is removed from printer 14.

Accordingly, claim 26 is believed allowable in its present form.

Independent claim 33 recites, in part, "an ink jet printer communicatively coupled to said computer, said ink jet printer including a controller communicatively coupled to a printhead, said printhead including a printhead memory having stored therein a printhead swath height correction value, said controller executing process steps to retrieve said printhead swath height correction value from said printhead memory and to forward said printhead swath height correction value to said computer, said computer modifying a format of said image data for use when printing with said printhead."

Claim 33 is believed allowable for substantially the same reasons set forth above with respect to claim 26. In addition, Arquilevich, et al. does not disclose, teach or suggest, forwarding the printhead swath height correction value to the computer, the computer modifying a format of said image data for use when printing with the printhead, as recited in claim 33. This embodiment of the present invention, wherein a format of the image data is modified by the computer using the printhead swath height correction value, is in contrast to an embodiment, wherein the advance distance is modified. (See Applicants' specification at page 15, lines 13-15).

Accordingly, in view of the above, claims 1, 5-6, 10-11, 15-16, 25-26 and 33 are believed to be patentable in their present form, and it is respectfully requested that the rejection of claims 1, 5-6, 10-11, 15-16, 25-26 and 33 be withdrawn.

Claims 2 and 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Arquilevich, et al. in view of Farr, et al. (U.S. Patent No. 6,685,290 B1). Claims 2 and 12 are believed allowable in view of their dependence from an otherwise allowable base claim (claims 1 and 11, respectfully), and Farr, et al. does not fill the deficiencies of Arquilevich, et al. with respect to claims 1 and 11. Accordingly, claims 2 and 12 are believed to be patentable in their present form, and it is respectfully requested that the rejection of claims 2 and 12 be withdrawn.

Claims 4, 14 and 23 were rejected under 35 U.S.C. 103(a) as being unpatentable over Arquilevich, et al. in view of Castano, et al. (U.S. Patent No. 6,755,499 B2). Claim 4 is believed allowable in view of its dependence from an otherwise allowable base claim 1, claims 14 and 23 are believed allowable in view of their dependence from an otherwise allowable base claim 11, and Castano, et al. does not fill the deficiencies of Arquilevich, et al. with respect to claims 1 and 11. Further, while Castano, et al. discloses using optical sensor unit 50 in detecting printhead alignment patterns (see Fig. 9b), no such use in measuring a printhead swath height is disclosed, taught, or suggested in Castano, et al. Accordingly, claims 4, 14 and 23 are believed to be patentable in their present form, and it is respectfully requested that the rejection of claims 4, 14 and 23 be withdrawn.

Claims 7 and 9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Arquilevich, et al. Claims 7 and 9 are believed allowable in view of their dependence from otherwise allowable base claim 1. In addition, as stated above, nowhere in Arquilevich, et al. is there any disclosure, teaching or suggestion of storing a printhead

swath height correction value in printhead memory, nor is there any disclosure, teaching or suggestion of retrieving the printhead swath height correction value from printhead memory. Rather, the memory 36 of Arquilevich, et al. shown in Fig. 1 is the memory of printer 14.

Thus, with this embodiment of the present invention the printhead swath height correction value stored in printhead memory travels with the printhead, regardless of the printer in which the printhead is ultimately mounted, and is retrieved from the printhead memory, whereas in Arquilevich, et al. if the swath height error adjustment parameter is retrieved, it is retrieved from printer memory 14, and the swath height error adjustment parameter cannot travel with the printhead if the printhead is removed from printer 14. Arquilevich, et al. provides no motivation to modify its own disclosure to place the printhead memory on the printhead substrate (claim 7) or ink reservoir (claim 9), since the Arquilevich, et al. approach is an in-printer approach with respect to a particular printhead installed in the printer, and no consideration is given in Arquilevich, et al. to retaining the swath height error adjustment parameter with the printhead.

Accordingly, claims 7 and 9 are believed to be patentable in their present form, and it is respectfully requested that the rejection of claims 7 and 9 be withdrawn.

Claim 8 was rejected under 35 U.S.C. 103(a) as being unpatentable over Arquilevich, et al. in view of Tham (U.S. Patent No. 6,857,731 B2). Claim 8 is believed allowable in view of its dependence from otherwise allowable base claim 1, and Tham does not fill the deficiencies of Arquilevich, et al. with respect to claim 1. Accordingly, claim 8 is believed to be patentable in its present form, and it is respectfully requested that the rejection of claim 8 be withdrawn.

Claim 24 was rejected under 35 U.S.C. 103(a) as being unpatentable over Arquilevich, et al. in view of Kanda, et al. (U.S. Patent No. 6,471,322 B2). Claim 24 is believed allowable in view of its dependence from otherwise allowable base claim 11, and Kanda, et al. does not fill the deficiencies of Arquilevich, et al. with respect to claim 11. Further, neither Kanda, et al. nor Arquilevich, et al., taken alone or in combination, disclose, teach or suggest that the swath for which the swath height will be measured is printed using multiple columnar arrays with a first color ink and a second color ink. Thus, claim 24 is believed patentable in its own right.

Accordingly, claim 24 is believed to be patentable in its present form, and it is respectfully requested that the rejection of claim 24 be withdrawn.

For the foregoing reasons, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject matter of the pending claims. The pending claims are therefore in condition for allowance, and Applicants respectfully request withdrawal of all rejections and allowance of the claims.

In the event Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally petition therefor and authorize that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (317) 894-0801.

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